ISSN 0097-4463

ANNALS
of CARNEGIE MUSEUM

CARNEGIE MUSEUM OF NATURAL HISTORY

4400 FORBES AVENUE • PITTSBURGH, PENNSYLVANIA 15213

VOLUME 47 1 DECEMBER 1978 ARTICLE 20

TWO NEW CARIBBEAN SUBSPECIES OF BARN OWL *(TYTO ALBA)*, WITH REMARKS ON VARIATION IN OTHER POPULATIONS

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ABSTRACT

The Barn Owl *(Tyto alba)* population of the Isle of Pines, previously considered identical to *T. a. furcata* of mainland Cuba, is described as new; it is smaller than *furcata* and whiter than all but a few extreme specimens of that race. The population of the Bay Islands of Honduras, previously placed with *T. a. pratincola*, is also described as new; it is smaller and whiter than *pratincola*. A female of this new race was in heavy molt while feeding young. Sexual dichromatism is marked in many races of this species, so color comparisons must be made sex for sex. The characters and geographic range of *T. a. guatemalae* need to be reassessed.

INTRODUCTION

Only three specimens of the Barn Owl *(Tyto alba)* are known to have been collected on the Bay Islands, off the Caribbean coast of Honduras (Monroe, 1968:153). The first of these was taken by James Bond on "Bonacca Island" (=Isla Guanaja) on 29 February 1936, and is in the collection of the Academy of Natural Sciences, Philadelphia (ANSP). Bond (1936) assigned this specimen to the North American race *T. a. pratincola* (Bonaparte), which he stated "is known to range

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Submitted 6 April 1978.

south to eastern Nicaragua." This statement was probably based on Ridgway (1914:607), who assigned a single Nicaragua winter specimen to this race. The other two Bay Islands birds were taken by A. C. Twomey at French Harbor, Isla Roatán, on 7 April 1947, and are in Carnegie Museum of Natural History (CM), where they were examined by Phillips in October 1977. He was struck by their small size when compared with specimens of *pratincola* from the United States, and noted some color characters as well. Parkes then borrowed Bond's specimen from the ANSP and continued the study.

One of the color characters noted by Phillips was the whiteness of the rectrices and secondaries of the Bay Islands birds. These are characters of the Cuban subspecies *T. a. furcata* (Temminck), so Parkes compared the three Bay Islands birds with a series of supposed *furcata* in CM. These included specimens from both mainland Cuba and the Isle of Pines. Quite unexpectedly, the birds from the latter locality proved to represent a distinctive population, as did the Bay Islands birds. Both populations are separable as subspecies.

Acknowledgments

We are grateful to Dr. Frank B. Gill of the Academy of Natural Sciences for lending us Bond's Isla Guanaja specimen. Parkes also examined and measured specimens at the ANSP, the National Museum of Natural History (USNM), and the American Museum of Natural History (AMNH) through the courtesy of the respective curators of those institutions.

Color Variation

During the course of this study it became obvious that various authors have underestimated the amount and the consistency of sexual dichromatism in at least some forms of this species. Ridgway (1914:605) stated that the sexes of *T. a. pratincola* were alike in color, but added in a footnote: "Apparently, however, females *average* darker than males; that is to say, in the extensive series examined there are more females than males among the darker colored specimens and more males than females among those with pure white underparts." His description was divided into three sections—average plumage, dark extreme, and light extreme. Descriptions of the North American race in some state and regional works we sampled all mention color variation, and some go so far as to designate dark and light "phases" (Roberts, 1932:604). All state or imply that the sexes are alike in color, with the exception of Oberholser (1974:443). This author described an "ochraceous phase" and a "light phase" for males of *T. a. pratincola,* and stated of females: "Similar to corresponding phase of . . . adult male but averaging darker." Oberholser appears to be the only author to have noticed sexual dichromatism in the bills of Barn Owls. He

described the bills of male *pratincola* as "dull pearly white to vinaceous pink," with the cere "pale brown." The bill of females was described as "vinaceous buff, becoming white at tip; cere vinaceous buff." It is not clear whether these colors were meant to apply to living birds or to study skins. In any case, the difference Oberholser described is visible in most study skins of *pratincola*. The bills of males are usually of a clear, pale, uniform color, whereas those of females have dark sides and a noticeably paler tip, the pale color sometimes extending along the ridge of the culmen. This character can be useful in deducing the sex of unsexed or dubiously sexed specimens, but must be used with caution. Specimens in CM suggest that *young* males of *pratincola* have bicolored bills like those of adult females. And, of course, the bills of some study skins are so discolored as to be completely untrustworthy. The sexual difference is less obvious in the pale Caribbean populations discussed later in the present paper.

Among the New World (North and Middle America, Greater Antilles) specimens examined during this study, the sexes from any given area segregated out almost completely by plumage color. Virtually all males are paler than females. The most conspicuous color character is usually that of the underparts. Among 22 reliably sexed specimens in the CM series of *T. a. pratincola,* there are *no* males with the rich ochraceous-buff underparts described by Ridgway as the "dark extreme," nor are there any females of the "light extreme" with pure white (but more or less speckled) underparts. Females appear to be more variable than males, in that some females have paler underparts, white washed with some shade of buff. Males generally have pure white underparts (more or less speckled), but some have a very light wash of buff over some areas. There is some evidence that *juvenile* males may regularly have a buffy stain on the breast (sometimes just the sides of the breast), but we have examined no specimens that illustrated molt from a buffy to a whiter plumage, which would help to confirm this as a character of juveniles. In any case, in the CM series there is no overlap between males and females of *T. a. pratincola* in color. A few specimens seen in other museums indicate that color segregation is not absolute. ANSP 86424, for example, a specimen from Vermillion Parish, Louisiana, is labelled as male, has the small measurements of that sex, but is a "dark phase" bird (although by no means of the dark extreme of *pratincola*).

Among the other populations studied for this paper, the generalization about sexual dichromatism in underparts color applies, but must be modified in accordance with the general darkness or paleness of the taxon. Dickey and van Rossem (1938:225) stated that four females of *T. a. guatemalae* (Ridgway) from El Salvador were "both collectively

and individually darker throughout'' than seven males. Often overlooked are variations in pigmentation in areas other than the underparts. Especially important are the markings of the remiges and rectrices; again, in all series studied for this paper, females inevitably have such markings darker and/or more extensive than do males. Ridgway's reluctance to make a more definite association between color and sex may well be due to missexed specimens in the older component of the USNM collection. The series we have examined indicate that if the sexes of these subspecies of Barn Owl are not wholly separable by color alone, exceptions are decidely rare. The principal point to be made here is that among the populations of North and Middle America and the Antilles, color comparisons *must* be made sex for sex when attempting to assess geographic variation.

In the species as a whole, the amount of sexual dichromatism varies geographically. Witherby (*in* Witherby et al., 1938:345) listed a number of color characters differentiating the sexes of the nominate race *T. a. alba* (Scopoli) of Europe, all involving increased pigmentation of females. Of the darker European race *T. a. guttata* (Brehm), however, Witherby (*in* Witherby et al., 1938:347) wrote: ''ADULT FEMALE.—Like male and not differing as female does in *T. a. alba*.'' Mees (1964:5) stated: ''There do not seem to be any differences in plumage between males and females in the species of Striges dealt with here,'' which included the Australian race *T. a. delicatula* (Gould). Parkes confirmed this statement, finding no apparent sexual dimorphism in any color character in the 31 sexed specimens of *delicatula* in the AMNH. On the other hand, the AMNH has 44 sexed specimens of the widely distributed South Pacific race *T. a. lulu* (Peale), of which Parkes was able to predict correctly the sex of all but one male and one female on the basis of underparts color alone.

Size Variation

Authors are in general agreement that male Barn Owls are smaller than females. Measurements made for the present study confirm this, but the *amount* of size dimorphism has been difficult to determine. The series of the insular populations are relatively small, and often skewed as to sex representation. The measurements of Ridgway (1914) are not directly comparable with ours, as they were made differently, but the relationship between the measurements of the sexes should be similar. The following figures indicate the percentages by which our mean measurements of females of *pratincola* exceed those of males, with the similar percentage computed from Ridgway's figures in parentheses: wing 2.3% (2.5%); tail 5.0% (2.2%); bill 3.0% (2.3%); tarsus 2.9% (−3.3%). Some of these differences (such as that in the tarsal measurements) may be attributable to missexed specimens in the

USNM, but also possibly to the geographic origin of Ridgway's series, which included a high proportion of specimens from California and Mexico. Specimens from California that we have measured (see Table 1) and Ridgway's table (1914:606) indicate that these and Mexican birds are appreciably smaller than those from most of the United States. As the type locality of *pratincola* is in Pennsylvania, we have felt justified in excluding these Pacific Coast and Mexican specimens when characterizing the subspecies *pratincola*. Ridgway himself, although not mentioning these size differences, pointed out that Pacific Coast specimens in general differ in color from others assigned to *pratincola,* and might ultimately prove separable. This question is outside the scope of the present paper, in which all references to *pratincola,* unless otherwise specified, may be assumed to apply to the populations of the United States other than the Pacific states.

The determination that a specimen has been missexed must of course be made cautiously, to avoid circularity of reasoning. The dimorphism in color and in size in the populations considered here is sufficiently consistent so that we are suspicious of the occasional very large and dark specimen sexed as male, or pale and small sexed as female, unless the sexing has been well documented by label notes on gonad condition; few of the specimens examined had any such documentation.

For this paper the wing was measured flattened on the rule, to attain the maximum measurement. Remiges and rectrices obviously worn more than 1 mm were excluded. The tails of these populations are variably forked, both geographically and individually. The normal tail measurement, which is a diagonal from the base of the central rectrices to the tip of the longest (in this instance outermost), was found to be difficult to take consistently, with the variation in tail spreading effected by the preparator complicating the natural variation. Far more consistent measurements were made by measuring the length of the central rectrix, a straight (not diagonal) measurement, so this somewhat unorthodox technique has been used for this paper.

SYSTEMATIC ACCOUNTS

Tyto alba niveicauda, new subspecies

Holotype.—CM 39,991, male (presumably adult) from Los Indios, Isle of Pines, Cuba, collected by G. A. Link, Sr., on 20 January 1913 (field number 535).

Characters.—Nearest *furcata* of mainland Cuba, but tail shorter and wing averaging shorter (see Table 1). Sex for sex, averaging whiter and paler than *furcata;* of 18 Cuban males, only four matched a series of five from the Isle of Pines in this respect. The few Jamaican specimens of *furcata* seen suggest that there might be slightly more overlap in color with *niveicauda* than is true of topotypical Cuban *furcata*. Comparisons here

Table 1.—*Measurements in millimeters of adult Barn Owls (see text for methods of measuring).*

Sex	Flattened wing Observed range (Mean) ± SD (N)	Central rectrix Observed range (Mean) ± SD (N)
	Tyto alba pratincola (U.S. except Pacific states)	
Males	322–357 (341.3) ± 7.87 (13)	125–138 (130.5) ± 4.55 (14)
Females	335–357 (347.8) ± 7.11 (13)	131–144 (136.0) ± 3.88 (15)
	Tyto alba pratincola (California and one Oregon)	
Males	322–339 (331.2) ± 5.05 (10)	120–135 (127.0) ± 4.78 (10)
Females	334–348 (340.0) ± 4.20 (11)	127.5–142 (134.4) ± 4.51 (11)
	Tyto alba furcata (Cuba)	
Males	332–349 (341.8) ± 4.94 (9)	128–138 (133.8) ± 3.52 (12)
Females	345–359 (353.8) ± 4.50 (4)	134–141 (138.0) ± 2.38 (7)
	Tyto alba furcata (Jamaica)	
Males	332, 333	126, 133
Female	345	136
	Tyto alba niveicauda	
Males	318–338 (330.8) ± 7.66 (5)	122.5–128 (126.4) ± 3.60 (5)
Female	347	128
	Tyto alba bondi	
Male	301	114
Females	296+ (very worn), 316	114, 114.5

are made between *niveicauda* and the majority of *furcata* specimens. *Males*—gray marbling of upperparts coarser so that more white background shows, giving a paler appearance. Rectrices completely white, with no markings whatsoever. Primaries paler, with dark spots along the shaft reduced, especially on proximal primaries; in extreme instances (CM 41,383), these marks reduced to a single spot on the four outer primaries only; buffy wash and fuscous freckling of tips of inner primaries reduced or lacking, with the palest birds (CM 36,064; 41,383) having the inner primaries unmarked white. All but innermost secondaries (=tertials) pure white, with *at most* a small linear dark mark midway along shaft, and slight fuscous freckling on outer web near tip of the three or four secondaries immediately distal to tertials; all specimens have at least some secondaries pristinely white. In most *furcata*, all secondaries have at least two spots along the shaft, and have their outer webs freckled against a pale buff background, from all to about the distal half of their length. Pigmentation of the small feathers of the lower half of the facial disk of *niveicauda* reduced or lacking. Tiny fuscous dots on white underparts averaging fewer, sometimes nearly lacking.

Females—the one available female of *niveicauda* is more lightly marked than any examined female of *furcata*. Gray marbling of upperparts paler. Dark rectrix spots reduced to linear marks along the shaft on the inner three to four pairs; the only trace of buff is a stain around the dark spots of the central pair of rectrices only, and freckling is confined to the tips of the two central pairs. The two outermost pairs of rectrices are

pure white. In most *furcata* the rectrices have two to four conspicuous dark spots (full crossbars in darker specimens), diminishing in size from inner to outer rectrices; the central pair is more or less washed with buff, diminishing outwardly so that little or none remains on outermost pair; some fuscous freckling at tips of all rectrices in darker and all but two outer pairs in paler specimens. In even the palest extreme "females" of *furcata,* only the outermost pair of rectrices were pure white (versus two outermost pairs in *niveicauda*), and measurements suggest that three out of five such pale *furcata* "females" were missexed males. The primaries of *niveicauda* are much paler than in most *furcata,* with dark crossbars reduced in size and number; inner primaries with outer margins white (buff in most *furcata*), with freckling much reduced. Outer and inner secondaries pure white except for small shaft-spots and some freckling on outer web; a few central secondaries pure white. Very few specimens of *furcata* have *any* pure white secondaries, and some of these (as indicated above) may be missexed males. Pigmentation of facial disk and ventral spotting reduced as in males. Cinnamomeous or buffy wash of white underparts much reduced, confined to sides of breast, as in palest extreme examples of *furcata.*

Range.—Known only from the Isle of Pines (Isla de Pinos), south of the western end of Cuba, Greater Antilles.

Remarks.—Todd (1916:235–236) discussed the CM series of Barn Owls from the Isle of Pines. He mentioned the fact that only one specimen exhibited any markings at all on the rectrices, but overlooked the significant fact that this was the only female in the series. The Isle of Pines, although separated from Cuba by a relatively narrow channel and presumably relatively recently disconnected from Cuba (Bond, 1956:78), is a moderate center of differentiation for birds. There are about eight valid subspecies of birds endemic to the island, including the Barn Owl described here. A few bird species vary geographically on Cuba itself. In four of these *(Gymnoglaux lawrencii, Mimocichla plumbea, Vireo gundlachi, Quiscalus niger)* the subspecies of western Cuba is shared with the Isle of Pines (Garrido and Garcia Montaña, 1975). In *Tyto alba,* however, the white extremes of *furcata* were collected all over Cuba and were not concentrated in the west, nor do these individuals come any closer than darker birds to the measurements of *niveicauda.*

Inclusion of the North American *T. a. pratincola* as an accidental visitant to Cuba (Garrido and Garcia Montaña, 1975:70) rested until recently on the willingness of Bond (1964:6) to accept as valid the alleged Cuban origin of two specimens, now in the ANSP (where Parkes examined them), that died in the Philadelphia Zoo in the 1890's. We regard these specimens as insufficient evidence of the natural occurrence of *pratincola* on Cuba. A verified occurrence on Cuba was not unexpected, however; as Bond (1964) pointed out, some individuals of *pratincola* are known to travel great distances, and one banded as a juvenile in Pennsylvania was found dead in Key West, Florida, only 150 km from the nearest point in Cuba. Garrido (1978) has now published the particulars of a specimen of *pratincola* collected at

Monte Barreto, Marianao, Cuba, 1 October 1976, a date on which a major migratory movement of passerines was also noted in Marianao.

Turning now to the population of the Bay Islands, this may be called:

Tyto alba bondi, new subspecies

Holotype.—CM 131,548, male (presumably adult) from French Harbor, Isla Roatán, Bay Islands, Honduras, collected by A. C. Twomey on 7 April 1947 (field no. 11,967).

Characters.—To some extent intermediate in color between *T. a. pratincola* and *T. a. furcata,* but markedly smaller than either (see Table 1). The single male specimen is slightly paler dorsally than the palest of all *pratincola* examined. Its tail is almost pure white, with a single broken crossbar near the bases of the central rectrices; two pairs of small spots representing remnants of central and subterminal crossbars on these same rectrices; and slight freckling on all but the two outermost pairs of rectrices. The palest male *pratincola* seen (CM 6661, Virginia) has the outer pair of rectrices pure white, then the remainder increasingly marbled with dusky toward the central pair, which has two fairly distinct and two broken crossbars. All other *pratincola* seen had much more heavily pigmented tails. The inner web of the outer primary of the male *bondi* has three broken crossbars (the proximal two hardly more than spots), whereas in *pratincola* there are four to five, sometimes broken but more often solid. The outer web of this primary in *bondi* has some spots at the level of the crossbars of the inner web, and some dark speckling at the tip, but otherwise the outer web and the outer half of the inner web are pale buff, barely more than cream-colored. In *pratincola* the crossbars continue across the outer web, and there is also heavy speckling in most individuals, on a background varying from rich light buff to dark tawny. All but the innermost secondaries (=tertials) of the male *bondi* are almost pure white, with speckling on the outer web (extending to the inner web on the innermost of these white secondaries). There are two to three dark marks near the shafts of the secondaries, where *pratincola* has dark bars completely crossing the feathers. Even the palest *pratincola* (CM 6661) has much heavier speckling on the outer webs of these secondaries, such that the slightly darker (compared with *bondi*) background color is almost completely obscured. Most *pratincola* have even heavier speckling, often completely obscuring the dark ground color of the outer webs of the secondaries. All *pratincola* in the CM series except 6661 have the tips of the feathers of the facial disk rich red-brown to blackish; in 6661 these markings are of a faint orange-buff. In the male *bondi* there is no pigment on the tips of the feathers of the lower two thirds of the disk (these appear dark, but the feathers are adventitiously stained).

In comparison with *furcata,* the male *bondi* has the dark marbling of the back finer, with the teardrop-shaped markings of the back, scapulars, and tertials smaller and less contrasting. The rectrices have fewer markings and less of the buff wash than most males of *furcata.* The primaries are similar to those of *furcata,* but paler, with the crossbars fuscous rather than blackish, and tending to break up more. Almost all of the remiges of all but the palest extremes of male *furcata* have a faint to well-marked teardrop spot near or at the tip; in the male *bondi* these are present on only the four innermost secondaries. The outer webs of the secondaries in average male *furcata* have a ground color of pure white for about the basal one third to one half, becoming washed with buffy on the distal portion. In *bondi,* the white basal portion is confined to the area normally concealed by coverts, the remainder being of a uniform cream color. The facial disk of *furcata* is pigmented as in *pratincola,* unlike *bondi.* The spotting of the underparts of the male *bondi* is much sparser, with smaller spots, than most *furcata,* about as in *niveicauda.*

The two females of *bondi* differ *inter se,* that from Isla Guanaja being more heavily pigmented than that from Isla Roatán. The paler bird was compared in detail with the two palest females of *pratincola* in the CM series (137,714, Maryland, and 94,894, Florida). The general dorsal color of the two female *bondi* differs little if at all from *pratincola,* except that the teardrop marks are smaller and less conspicuous. In both *bondi* the two outermost pairs of rectrices are much paler than in *pratincola* females of similar underparts color. The paler *bondi* has the outer rectrix ground color pure white, the second outermost faintly washed with buff on the inner web. The outer rectrix of the pale bird has three fuscous spots rather than crossbars, these almost completely confined to the outer web. The darker *bondi* has a buff wash along the midline of the otherwise white outer rectrix, with two central spots and a broken subterminal crossbar. Even the palest-tailed female *pratincola* have at least an indication and usually strong crossbars on *both* webs of both of the two outermost rectrices, and none have any of these areas pure white—there is at least some wash of buff or pale fuscous. In darker *pratincola* females, the outer webs of the outer rectrices are no paler than the central rectrices, giving the whole tail a uniform ground color.

The primaries of female *bondi* are paler to much paler than those of *pratincola,* with smaller crossbars. The outermost primary of the paler *bondi* has the inner web ground color very pale buff, almost white. In the darker *bondi* it is a deeper buff, gradually paling to whitish buff at the inner margin. In even the palest *pratincola,* the outer half of the inner web is the same color as the outer web, and is sharply defined from the inner half of the outer web, which is white. The crossbars of the outer primary of the paler *bondi* number three plus a tiny spot at the shaft where the proximal crossbar would be. In the darker *bondi* there are four crossbars and in *pratincola* the number varies from four to five. The ground color of the secondaries is also paler to much paler than in *pratincola.* That of the inner webs is white in the paler *bondi.* In the darker *bondi* the ground color of the outer web, and also the crossbars, extend a few millimeters across the shaft to the inner web. In *pratincola* the ground color extends across the whole tip of the inner web, the white inner edge occupies half or less of the width of the inner webs of the secondaries, and the crossbars invade this white part.

The facial disk of the darker *bondi* consists of orange-buff feathers, those of about the lower third having small blackish tips. In the paler *bondi,* the disk feathers are white except for a few along the lower edge, which have narrow blackish tips. In *pratincola* the ground color varies, but the feathers of the lower half of the disk have well-marked black tips and a subterminal band of reddish brown.

In comparison with females of *furcata,* the marbling of the back of both of the *bondi* specimens is finer, so that less of the white ground color shows through, giving a blacker appearance to the dorsum of *bondi.* There is less difference in the teardrop spots than in the males, but those of *bondi* have the white centers rounder or more arrowhead-shaped, less linear. The primaries are much like those of *furcata,* but with more freckling on the outer web. Similarly, the secondaries are like those of *furcata,* but with darker crossbars and more freckling on the outer webs and tips. The facial disk feathers are not diagnostic in this instance, those of *furcata* being about midway between those of the paler and darker specimen of *bondi.* The spots on the underparts are fewer and smaller than in *furcata,* but somewhat larger and more abundant than in the female *niveicauda.*

Range.—Known only from Islas Guanaja and Roatán, two of the three largest of the Bay Islands, off the Caribbean coast of Honduras.

Remarks.—It is a pleasure to name this distinctive form for our friend James Bond of the Academy of Natural Sciences of Philadelphia, collector of the first Bay Islands specimen of Barn Owl, whose

interest in the Caribbean Islands has long included those of the periphery, such as Isla Cozumel, the cays off Belize, and the Bay Islands.

It is unlikely that the difference in color between the Guanaja and Roatán females represents geographic rather than individual variation. In the only species that is known to show geographic variation *within* the Bay Islands, *Melanerpes aurifrons,* the populations of Isla Utila and Isla Roatán were obviously derived from two rather different mainland subspecies groups (Monroe, 1968:214). Monroe (1968:399) listed 29 resident land bird species from the Bay Islands; two of these are based on single, probably mislabeled specimens (Phillips, 1970). Of the 27 remaining species, Monroe recognized endemic Bay Islands subspecies for six, with the Barn Owl now making a seventh. Monroe apparently did not examine Bond's Isla Guanaja Barn Owl, as he erroneously stated (1968:154) that all of the Bay Islands specimens are "white-phase birds." His statement that Bay Islands Barn Owls are "indistinguishable from North American specimens" is, of course, also erroneous as demonstrated in the present paper.

Bond's specimen is of special interest to students of molt. It was a breeding bird—a note on the label reads "shot at nest while carrying rat to young." It is, however, actively molting flight feathers, and there are also scattered sheathed body feathers. At least some of the primaries and secondaries are partly grown, but the exact number would be difficult to determine without damaging the specimen. On the right side of the tail, rectrix 6 (outermost) is old, 5 about two thirds, 4 about three quarters, 3 old, 2 about three quarters grown, and 1 about seven eighths grown. On the left side, rectrices 6, 5, 3, 2, and 1 are old, and 4 about two thirds grown. Stresemann and Stresemann (1966:373) stated that most molting *Tyto alba* that they had examined had only one or two rectrices growing at any one time, and they found none with more than three. The Isla Guanaja specimen was growing four new rectrices on the right side and one on the left.

Neither Payne (1969) nor Foster (1975) mentioned owls in their surveys of molt/breeding overlap in tropical birds, but Payne later (1972) suggested that females of the far northern strigid owls *Nyctea scandiaca* and *Surnia ulula* "may molt soon after egg-laying."

Remarks on Middle American Mainland Populations

Carnegie Museum of Natural History has a male Barn Owl taken at Los Planes, in the coastal lowlands of Honduras, and a supposed pair from Siguatepeque, at about 1,000 m elevation in the interior, all collected by A. C. Twomey and R. W. Hawkins. Monroe (1968:154) wrote of the lowland male that it "is a white-phase individual matching *pratincola.*" It indeed matches male *pratincola* in color, but has decidedly

shorter wings and tail, matching the Isla Roatán male fairly closely in this respect. Monroe assigned all Barn Owls from the interior of Honduras, including the CM specimens from Siguatepeque, to *T. a. guatemalae* (Ridgway). Although Twomey and Hawkins sexed these as a pair, this must be regarded as dubious. Both are "dark-phase" birds, and the supposed male is indeed slightly paler than the female. However, the measurements of the two are almost identical, with the "male" having a wing *longer* than that of the female, and matching males of *pratincola,* whereas the female is decidedly smaller than females of *pratincola.* The color differences between these two specimens are well within the normal range of variation shown by females of other subspecies, and, in fact, the two are more alike than are the two females of *bondi.* Enough other missexed specimens have been found among the Honduran birds taken by Twomey and Hawkins to make quite reasonable the assumption that both of the Siguatepeque birds are, in fact, females. Given this assumption, the three CM Honduras specimens are all smaller than *pratincola,* and the plumage and size differences between the Los Planes male and the two Siguatepeque females are quite compatible with the degree of sexual dimorphism shown in other populations. It is likely that the mainland of Honduras is inhabited by only a single subspecies of *Tyto alba* rather than two as postulated by Monroe. This would presumably be *T. a. guatemalae,* but the status of that supposed subspecies needs reexamination.

According to Wetmore (1968:146), "The race *Tyto a. guatemalae* ranges from western Guatemala through southern Central America, to northern Colombia. It differs from *Tyto alba pratincola* of North America and northern Central America only in having slightly darker color." Bond (1936), however, as quoted earlier, stated that *pratincola* of North America "is known to range south to eastern Nicaragua." Friedmann et al. (1950:137) gave the range of *pratincola* as south "to eastern Guatemala and probably eastern Nicaragua." They did not mention *guatemalae,* thus apparently either overlooking or rejecting the identification of a female specimen from Jalapa, Veracruz, Mexico, as *guatemalae* by Davis (1945), who wrote "It is darker both dorsally and ventrally than *pratincola* from southern Texas, Nuevo León, and the Valley of México, and matches the lighter-colored specimens of *guatemalae* from Central America in the Biological Survey Collection. This record extends considerably northward the known range of this race." On the other hand, Lowery and Dalquest (1951) wrote of their male from Potrero Viejo, Veracruz (about 150 km SSE of Jalapa): "This specimen is virtually indistinguishable from light-phased examples from the United States, thereby excluding the possibility of its being referable to *Tyto alba guatemalae.*" Alvarez del Toro (1964)

assigned the Barn Owls of Chiapas, the southernmost state of Mexico (adjacent to Guatemala), to *T. a. pratincola* without comment.

At the southern end of the putative range of *guatemalae,* its ascription to northern Colombia by Meyer de Schauensee (1949) is based on a letter from Wetmore quoted by Dugand (1945), in which a specimen from Los Pendales, Atlántico, as well as the "Bogotá" trade skin holotype of *T. a. subandeana* Kelso were stated to be inseparable from what Wetmore called the "quite rare" light phase of *guatemalae.*

Wetmore's measurements of *guatemalae* (1968:145) were taken from a series of 10 males and 10 females from Guatemala, El Salvador, Nicaragua, Costa Rica, and Panama. Combining measurements from this large area obscures what appears to be geographic variation in size. This is indicated by measurements taken for this study, as follows: Honduras—♂ wing, 314, tail, 111.5, and ♀ wing, 326, 331, tail, 129, 129; Nicaragua—♂ wing, 324, 327, 329, tail, 116, 123, 125, and ♀ wing, 329, 339, 350, tail, 129, 136, 140 [Nicaragua series includes some sexed inferentially]; Costa Rica—♂ wing, 333, tail, 129, and ♀ wing, 332, 332, tail, 130, 133; Panama—♂ wing, 313, 315, tail, 119, 121, and ♀ wing, 310, tail, 125.

Several points are of interest in this list of measurements. The Honduras lowland male is markedly small in comparison with the cotypes of *guatemalae* (as designated by Deignan, 1961:138) and other specimens from Nicaragua, but the highland females match the smallest Nicaragua females. Costa Rica specimens match those from Nicaragua reasonably well, but those from Panama are tiny. The few measurements given by Ridgway (1914:610) match this pattern. A larger series would be required to verify the seeming lack of size dimorphism in Costa Rica and Panama.

Direct color comparisons were made at AMNH among two Nicaragua (Matagalpa), three Costa Rica, and two Panama specimens of *guatemalae.* Among these, the Nicaragua specimens were darker and blacker dorsally than the Costa Rica, with a darker tail bearing wider black bands. The Panama specimens were nearest the Costa Rica in dorsal color. Ventrally, the Costa Rica and Panama females were very dark in ground color; one Costa Rica (Nicoya) and the single Panama (Agua Dulce, Coclé) female were heavily marked below, the second Costa Rica female (San José) relatively lightly spotted. The Costa Rica male (Las Cañas, Guanacaste) was very pale, almost white, and lightly spotted below; that from Panama (Almirante, Bocas del Toro) medium buff below but with abundant small spots. Nicaragua specimens (AMNH and USNM) are all buffy below, usually with rather heavy spotting. Those thought to be males on the basis of measurements are consistently less heavily pigmented than those thought to be females, agreeing with the few sexed specimens from this country. Except for

the whitish Costa Rica male, *underparts* color of Panama and Costa Rica specimens did not differ significantly (that is, within the normal range of variation of a subspecies of *Tyto alba*) from the Nicaragua series.

Dickey and van Rossem (1938:225) stated that "there is some evidence that *guatemalae* may be only a dark phase of the common North American barn owl, for a Sonora specimen in the Dickey collection is apparently identical with El Salvador birds." The "dark phase" Central American specimens are not only of a rich dark buff on the underparts, but have heavier ventral markings than most "dark phase" *pratincola* from the United States, with a strong tendency for the development of linear streaks and crossbars rather than merely dots on individual feathers. Even the pale males from Central America tend to show some narrow linear streaks, especially along the flanks, not seen in typical males of *pratincola*. However, California and western Mexico specimens of *pratincola* show a strong tendency toward dark ventral markings of the kind typical of *guatemalae* (examples include AMNH 360,333 from Witch Creek, San Diego Co., and 476,476 from Los Angeles). The measurements of Nicaragua and Costa Rica specimens of *guatemalae* match well those of a series of 21 from the Pacific Coast (20 California, one Oregon). The California series as a whole could be considered to be intergrades between *pratincola* and *guatemalae,* were it not for the small Honduras specimens from an area between the range of *pratincola* and the type locality of *guatemalae* (Chinandega, Nicaragua; the name "*guatemalae*" was admitted by its author to have been a *lapsus,* as he had seen no Guatemala specimens [Ridgway, 1914:610]).

It should be clear from the above remarks that the taxonomic status of the Barn Owls of the Pacific coast of the United States and of all of Middle America south to northern Colombia needs a thorough investigation, assembling all available material, and analyzing *both* size and color, keeping sexual dimorphism in mind for both. Neither the characters nor the geographic range of "*guatemalae*" have ever been satisfactorily determined.

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